CLAY MINERALS IN THE SEDIMENTS FROM THE REGION OF FALL OF MORASKO METEORITE.

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Introduction: The Morasko Meteorite Reserve is located in the northern part of city of Poznań (Poland). Over 5000 years ago a meteorite shower left at least hundreds of meteorite pieces and several impact craters [1]. The region of impact had been formed by glacial activity and the near-surface sediments are composed mainly of glacial tills underlain by the clay-silt sediments, known as the Poznań Formation [2]. One of the major constituents are clay minerals, which may be useful indicators of changing temperature and presure conditions. Te objective of this work is to identify the mineralogical composition of sediments from the region of Morasko meteorite impact and to determine whether they indicate any alterations, which could be due to mineralogical effect of the meteorite fall.

Methods: The main components of the Mio-Pliocene clay and Pleistocene tills were determined by the use of microscopic and X-ray diffraction studies [3].

Results and Discussion: Primary and secondary components in grain fractions ($\phi > 0.063$ millimeters and $\phi <$ 2 micrometers) were investigated. Primary components in tills and clays are as follows: quartz, feldspar, clay minerals (illite, kaolinite), as well as pebbles of igneous rocks. Secondary weathering processes resulted in the development of modern soil profiles (humus, root fragments) and aluminum silicates of vermiculite-type minerals. Clay clasts of the older sediments (Poznań Formation clays) in the younger tills contain components typical of this formation, namely: illite, kaolinite, smectite or smectite-illite minerals, accompanied by very fine-grained quartz and feldspars. Investigations of vertical profiles of ejecta (composed of components of till and the clays) and underlying sediments have not revealed clear changes in the mineralogical composition. The relatively homogeneous mineralogy of fine fraction could have resulted from weathering processes. The weathering product of the ejecta, clays and tills are very similar. They depend on the primary composition of the fine fraction and secondary minerals formed during the development of contemporary soil profiles.

References: [1] Muszyński A., et al. 2012. Studies in Geography and Geology: *Sc. Publ. Bogucki, Poznań* 28: p.109. [2] Duczmal-Czernikiewicz A. and Muszyński A. 2015. 3th Conference The Bridging the Gap: Impact Cratering in Nature, Experiments, and Modeling. p.1095. [3] Moore D.M. and Reynolds R.C. Jr., 1989. X–Ray Diffraction and the Identification and Analysis of Clay Minerals, *p. 332 Oxford University Press.*

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